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ALBERTA NATURALIST

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Cover: Duck-billed Dinosaur (Corythosaurus), by John Kristensen

Our cover artist, John Kristensen, chose one of Alberta's commoner dinosaurs to accompany his book review of the Provincial Museum's recent volume on this group. John is writing a thesis at the University of Alberta on the behaviour of female Blue Grouse. His natural history interests include birdwatching, plant photography, fishing and fossil hunting. In the summer of 1970, he worked for Dr. R. Rox of the University of Alberta on the latter's paleontological explorations in the vicinity of Dinosaur Provincial Park.

ALBERTA CHRISTMAS BIRD COUNTS, 1974

This year, five Christmas Bird Count reports were received. Although there were no reports from counts in Cold Lake and Jasper (see the Alberta Naturalist, Vol. 4 No. 1), two new counts were reported: Banff and Water Valley. A total of 23,939 individuals of 61 species were counted by 125 participants (compared with 19,686 individuals of 59 species counted by 105 participants in 1973). Following is a summary.

BANFF. December 29, 1974; 15 miles by car, 3 miles on foot; cloudy periods, 20-30°F., very strong westerly winds; 12-15" snow cover. 23 species, 412 individuals. (Add: Goshawk, 1, Dec. 28; Townsend's Solitaire, 1, Dec. 30).
Participants: Dorothy Carleton, Ed Carleton, Mary Cully, Shiela Douglas, Aileen Harmon, Diane McIvor (compiler), Mike McIvor, Eleanor Montour, Harold Mortimer, Bunty Nelson, Morna Schechtel, Gerry Wilkie.

CALGARY. December 29, 1974. 46 species, 15,564 individuals.
Participants: Des Allen, Liz Allen, Nick Allen, Peter Allen, Jennifer Allen, Stuart Alexander, Charles D. Bird, Arthur Bird, Eric Bird, Margaret Book, Hattie Boothman, Peter Bricknell, Rudi Butot, Murray Christmas, Frances Cunningham, Daphne Denton, Sandy Denton, Linda Gerlitz, Arthur Godfrey, Maxine Godfrey, Suzanne Graham, Willis Hall, Ian Halladay (compiler) Val Haines, Cedric Hitchon, Stuart Johnston, David Jones, Diane Keats, Gordon Kerr, Barbara Koncohrada, Ralph Kitchen, Ross Lein, Janis Lemiski, Garry McKay, Nannette McKay, Anna Mazurek, Robb Mitchell, James Podlubney, Andy Scollon, Peter Sherrington, Margie Stiles, Hank VanderPol, Chip Weseloh, Linda Weseloh.

EDMONTON. December 15, 1574. 43 observers in 16 parties; 21-36°F.; snow

ALBERTA CHRISTMAS BIRD COUNTS, 1974

SPECIES	BANFF	CALGARY	EDMONTON	STETTLER	WATER VALLEY
Swan (sp.)		2			
Mallard	11	4623	109		
Black Duck		1			
Lesser Scaup			3		
Common Goldeneye	4	298	54		
Common Merganser		19			
Goshawk			2		1
Rough-legged Hawk			3		
Golden Eagle		3			
Bald Eagle		3			1
Prairie Falcon		3			
Merlin		2	6		
Ruffed Grouse		1	6		2
Sharp-tailed Grouse		7	3		2
Ring-necked Pheasant		2	15		1
Gray Partridge		81	20		
Killdeer		3			
Rock Dove		3846	220	13	3
Great Horned Owl		1	5		
Snowy Owl		11	7	1	1
Great Gray Owl					1
Short-eared Owl			1		
Belted Kingfisher	1	1			
Common Flicker		3			
Pileated Woodpecker					2
Hairy Woodpecker	2	6	19	5	5
Downy Woodpecker	3	30	19	7	5
North. 3-Toed Woodpecker	2	2	3		
Gray Jay	6		1		14
Blue Jay	1		92	1	4
Blk.-billed Magpie	21	494	461	31	94
Common Raven	11	2			11
Common Crow	3	1			
Clark's Nutcracker	24				
Blk.-capped Chickadee	27	317	568	39	88
Mountain Chickadee	26				1
Boreal Chickadee	2	7			20
White-br. Nuthatch		4	6		5
Red-br. Nuthatch	2	21	15	1	
Brown Creeper	1	9	3		
American Dipper	1	3			
Winter Wren		1			
American Robin		3	2		
Townsend's Solitaire		2			
Golden-cr. Kinglet		18	50	12	8
Ruby-cr. Kinglet		6			
Bohemian Waxwing		4078	3694	45	
Cedar Waxwing		4			
Northern Shrike			3		1
Common Starling	1	226	12	1	
House Sparrow	250	1094	848	152	183
Evening Grosbeak		24	301	5	
Purple Finch			3		
Pine Grosbeak	6	10	38	1	7
Hoary Redpoll			3		
Common Redpoll		86	196	3	20
Pine Siskin		18	1		
Red Crossbill			16		
White-winged Crossbill	14	171	118	6	197
Dark-eyed Junco	3	17			
Snow Bunting			35		
TOTAL # INDIVIDUALS	422	15564	6961	323	679
TOTAL # SPECIES	23	46	39	16	26

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almost absent. 39 species, 6961 individuals. (Add: Black Duck, Pileated Woodpecker, Dark-eyed Junco.)

STETTLER. December 26, 1974. Total party hours, 25 (8 by car, 13 on foot, remainder at feeders); total party miles, 200 (190 by car, 10 by foot, skis and snowshoes); 10-32°F., clear then cloudy, then clear and sunny, wind SE 5; 6-10" snow, large drifts and many bare spots; no open water. 16 species, 323 individuals. (Add: Cooper's Hawk; Rough-legged Hawk; Great Horned Owl; Horned Lark).
Participants: Emil Dannewald, Martin Grafe, Trudy Grafe, Edith Greenlee, Graeme Greenlee, Patricia Greenlee, Martha Kruger, Ron Kruger, Lloyd Lohr (compiler), Barbara Smith, Eric Smith, Karen Smith.

WATER VALLEY - WILDLIFE RESERVE OF WESTERN CANADA. December 15, 1974. 26 species, 679 individuals.
Participants: Ellen Buckler, Rudi Butot, Willis Hall, Peter Hayes, Stuart Johnston, Paul Marhenke, John Paton, Jamey Podluboy, Jack Shier, Phyllis Shier, Miles Smeeton, Fay Stone, Pearl Stone.

REPORT OF THE AORC, 1974

by H.C. Smith, Secretary

The Alberta Ornithological Records Committee has been functioning for one year. In this period of time several records have been submitted to the committee for adjudication. These have come in the form of photographs and written documents. A summary of the records received and the adjudication of the committee for the 12-month period January 1, to December 31, 1974, is the purpose of this note.

HOUSE FINCH, submitted by R. Butot, 81 Capri Ave. NW, Calgary. Adjudication: Substantiated Record.
OLDSQUAW, submitted by I. Halladay, 2103 Crocus Rd., Calgary. Adjudication: Substantiated Record.
WESTERN SANDPIPER, by Cliff Wallis, 32, 10127 121 Street, Edmonton. Adjudication: Substantiated Record.
NASHVILLE WARBLER, by Edward Andrusiak, General Delivery, Banff. Adjudication: Substantiated Record.
WHITE-FACED GLOSSY IBIS, by David Stirling, Naturalist, Parks Branch, Department of Recreation and Conservation, Victoria, B.C. Adjudication: Substantiated Record.

As well as receiving records for adjudication, the AORC has received records for filing. These include records of individual species as well as lists of birds seen in a given area. Records were received from the following people:

C. Davison Ankney of London, Ontario, on birds observed in south-western Alberta, June 9-14, 1973.

J.C. Finlay reported the occurrence of Black-headed Grosbeaks.

W. Wishart submitted a report on a Great Gray Owl.

Wayne Weber sent in a list of birds for Elk Island Park.

Mike and Diane McIvor reported a Blue Jay in Banff Park.

All the photographs and records are on file at the Provincial Museum of Alberta, 12845 - 102 Avenue, Edmonton.

BETWEEN SEASONS

by E.T. Blowers
Little Smoky, Alberta

Golden leaves float gently down
Ice edged streams flow by,
Predatory frost's the grass turns brown
as migrants southward fly.

Diamonds of ice reflect dawn's light
in spectacular array
Wind raped trees embrace the night
as summer steals away.

Silent now the forest pool
tranquility its face
No young otters play the fool
nor terns display their grace.

In stark relief the poplars stand
like prisoners row on row,
till winter comes with icy hand
and miracles of snow.

October, 1974

1974 ALBERTA FLOWERING DATES

by C.D. Bird

The March 1974 issue of the Alberta Naturalist contains a summary of the Federation of Alberta Naturalists' project to gather flowering dates on 100 key plants in Alberta during the 1973 season. This project was carried out again in 1974 and the following Table summarizes the new results. The dates for 1973, with some additions, are presented again so that readers and participants will have a chance to readily compare the two years. Participation (91 people) in 1974 was greater than in 1973 (85 people) due to an increased interest in the project.

The species mentioned in the Table are essentially those dealt with in 1973 but the total has been reduced to 90 key species by the elimination of some problematic species and by the addition of a few significant ones. The four basic criteria for species selection were those employed in the last report. The reduction from 100 to 90 was an attempt to further simplify the project and reduce the paper work for all concerned.

Seventeen areas were included in the last report while, as a result of increased data in 1974, this has been increased to 27 in the present case. Again the areas have been arranged from south to north, and, in those cases of similar latitude, from lower elevation to higher elevation. The areas, with the locations that they include are (1) Waterton; (2) Mountain View - Beazer, Carway, Police Outpost Provincial Park; (3) Milk River - Writing-on-stone Provincial Park; (4) Cypress Hills - Elkwater, Thelma; (5) Crowsnest - Beaver Mines, Bellevue, Burmis, Coleman, Cowley, Hillcrest, Lundbreck, Pincher Creek; (6) Fort Macleod - Brocket; (7) Lethbridge - Chin, Raymond; (8) Medicine Hat - Seven Persons; (9) Porcupine Hills - Cayley, Claresholm, Nanton, Stavely; (10) Brooks - Bowmanton, Buffalo, Hilda; (11) Champion - Lomond, Travers, Vulcan; (12) Calgary - Cochrane, DeWinton, Springbank, Wildcat Hills; (13) Longview - Pekisko, Turner Valley; (14) Carseland - Dalemead, Strathmore; (15) Bragg Creek - Brown-Lowery Natural Area, Priddis; (16) Canmore - Exshaw, Seebe; (17) Banff - Lake Louise; (18) Drumheller - Beynon, East Coulee, Gem, Hand Hills, Hesketh, Hussar, Kirkpatrick, Morin, Rockyford, Rosebud, Rosedale, Standard; (19) Olds - Carstairs, Crossfield, Didsbury; (20) Red Deer - Bentley, Bowden, Delburne, Elnora, Innisfail, Lacombe, Lousana, Morningside, Penhold, Pine Lake, Rochon Sands Provincial Park; (21) Rocky Mountain House - Nordegg, Crimson Lake, Ricinus, Sundre, Water Valley; (22) Stettler - Big Valley, Erskine, Fenn, Forestburg, Halkirk, Hanna (23) Camrose - Bittern Lake,

		Waterton Area	Mountain View Area	Milk River Area	Cypress Hills Area	Crowsnest Area
Elevation		4200'	4400'	3200'	4100'	4200'
Achillea millefolium ssp. lanulosa - Common Yarrow	1973		Jn17			
	1974	Jn29	Jn21			My27
Agoseris glauca False Dandelion	1973		Jn5			
	1974	Jn29	Jn21			Jy29
Allium textile Prairie Onion	1973					
	1974		Jn21			Ap17-Jn22
Amelanchier alnifolia Saskatoon-berry	1973					My19-26
	1974					
Androsace septentrionalis Fairy Candelabra	1973		My11			My19
	1974				My19	My27
Anemone canadensis Canada Anemone	1973					
	1974	Jn29				
A. multifida Cut-leaved Anemone	1973		Jn17			
	1974	Jn29	Jn21			Jn22
A. patens var. wolfgangiana Prairie Crocus	1973		My11	Ap5	Ap26-Jn12	Ap4-My19
	1974				Ap20-My19	My27 Se7
Arctostaphylos uva-ursi Common Bearberry	1973					My19
	1974				My19	
Arnica cordifolia Heart-leaved Arnica	1973	Jn13-17			Jn11	
	1974	Jn29				Jn22
Astragalus agrestis Purple Milk Vetch	1973		Jn17			
	1974		Jy22			Au8
Balsamorhiza sagittata Balsam Root	1973		Jn5			My12-21
	1974	Jn29	Jn21			My9-27
Caltha palustris Marsh Marigold	1973					
	1974					
Calypso bulbosa Calypso	1973				My29-Jn11	My19-Jn3
	1974					
Campanula rotundifolia Bluebell	1973					
	1974	Jn29	Jy22			Au9
Castilleja miniata Common Red Paintbrush	1973					Jn10
	1974	Jn29	Jn21			
C. septentrionalis Common Yellow Paintbrush	1973		Jn17			
	1974					
Cerastium arvense Field Chickweed	1973					My19
	1974	Jn29	Jn2		My19	My12-27
Chrysopsis villosa Golden Aster	1973					Jn20
	1974	Jn29	Jy22			Au9
Clematis verticellaris var. columbiana - Purple Clematis	1973				My27-Jn5	
	1974	Jn29				My27-29
Comandra pallida Pale Comandra	1973					
	1974	Jn29	Jn2			My27
Cornus canadensis Bunchberry	1973					
	1974					My27
Corydalis aurea Golden Corydalis	1973					My19
	1974					

Fort Macleod Area	Lethbridge Area	Medicine Hat Area	Porcupine Hills Area	Brooks Area	Champion Area	Calgary Area	Longview Area	Carseland Area
3200'	3100'	2200'	3500'	2500'	3000'	3500'	4500'	3100'
Jy4-11	My30-Jy2 Jn7		Jy6-Au9 Jn24-Jy12			Jn4-Jy8 My22-Oc1		
	Jn21		Jy6 Jn27-Au9			Jn17-Jy4 Jn23-Jy13	Jn16 Se21	Jn3 Jn19
	My20 My28	My23	 My30	Jn2		My15-Jn20 My22-Jy12	Jn9-16	My27-Jn3 Jn15
	My10-20 My10		 My8-27	My19		My7-Jy27 My11-Jn15	Jn9-16 My25-Jn23	Jn3 My12-Jn15
	 My13		My1-Jy8 My30	My11-Jn2		Ap24-Jn22 My2-Jy13	Jn9-16 My25-Jn1	 My12
	 Jn7	My30-Jy3				My12-Jy4 My26-Jy13	My29	
Jy4-11	My20-Jn21 My28		My19-Jy6 My8-Jy3			My13-Jy19 My8-Jy15	Jn9-16 Jn1-23	Jn3
Ap17	Mr24-My12 Ap19-25		 Ap7-Jn9 Se6	My19	Ap18-20	Mr16-Jn17 Au25-Se29 Ap6-Jy17 Nv1-11	Jn9-16 Ap12-Jn1 Se21	
			My12-13			Ap20-Jy4 Ap30-Jn3	My29-Jn16 My25-Jn1	My12-25
						Jn10	Jn9-16 Jn24	
			 My30-Jy12			My26-Jy4 My21-Au15	Jn9	
			 Jn2					
						My21-Jn17		
Jy4-11	Jn21-Jy2		Jy9-Au9 My30-Jy19			Jy23-Se30 Jn12-Au24	Se21	Jn19
						Jn10 Jn30-Jy13	My20-Jy1 Jn24	
			Jy6 Jn17-Jy12			My31-Jy27 Ju18-Jy13	Jn9-16	
	My10-20 My10		My13 My27-Jy5			My13-Jy4 My25-Jy13	Jn9-16 My25-Jn23	My12-Jn15
Jy4-11	Jn20-Jy2		Au9 Au8-9			Jy11-Oc25 Jy7-Se22	 Jy19-Se22	
			My19-Jn3 My30			My13-Jy4 My12-Jn15	Jn9-16 My25-Jn1	
	My20-21		 My30-Jn6	Jn2	Jn5	My22-Jn10 My11-Jn24	My29-Jn16	 My14-21
						Jn17		
						My13-Jn6 My19-30	Jn9-16	Jn3

		Bragg Creek Area	Canmore Area	Banff Area	Drumheller Area	Olds Area
Elevation		3900'	4200'	4500'	2300'	3400'
Achillea millefolium ssp. lanulosa - Common Yarrow	1973				Jn14	
	1974	Jy1	Jn21-29	Se22-Oc26	Jn16-Jy5	
Agoseris glauca False Dandelion	1973		Jn13-17			
	1974	Jy1	Jn16-Oc26			
Allium textile Prairie Onion	1973				My20-Jn3	
	1974				Jn10	Jn13
Amelanchier alnifolia Saskatoon-berry	1973		My27		My12-14	
	1974		Jn8-16		My4-11	Jn2
Androsace septentrionalis Fairy Candelabra	1973		My27-Jn17		My5-13	
	1974		Ap17-Jn16	Jn4	My11	
Anemone canadensis Canada Anemone	1973				My12-Jy4	
	1974				Jy10	Jy2
A. multifida Cut-leaved Anemone	1973		My21-27			
	1974	Jy1	Jn3-16	Jn4		
A. patens var. wolfgangiana Prairie Crocus	1973		Ap10-My27		Ap1-My12	
	1974	Ap21	Ap15-Jn16	Ap24	My4-11	
Arctostaphylos uva-ursi Common Bearberry	1973		My14-21			
	1974	Jy1	Ap28-Jn16	Jy20		
Arnica cordifolia Heart-leaved Arnica	1973	July8		Jn8		
	1974		Jy11			
Astragalus agrestis Purple Milk Vetch	1973					
	1974		Jn16			
Balsamorhiza sagittata Balsam Root	1973					
	1974					
Caltha palustris Marsh Marigold	1973					
	1974					
Calypso bulbosa Calypso	1973		Jn8			
	1974	Jn8	My26	Jn4-9		
Campanula rotundifolia Bluebell	1973				Jy6	
	1974		Jn29-Jy11	Se22-Oc26	Jn29-30	
Castilleja miniata Common Red Paintbrush	1973		Jn4-17			
	1974	Jn15	Jn9-Jy11	Jn4-Se22	Jy9	
C. septentrionalis Common Yellow Paintbrush	1973					
	1974			Jy20	Jn23-Jy9	
Cerastium arvense Field Chickweed	1973		My16-21		My12-20	
	1974	Jy1	My21-Jn16	Jn4	Jn15	
Chrysopsis villosa Golden Aster	1973					
	1974					
Clematis verticellaris var. columbiana - Purple Clematis	1973		My25		My19	
	1974	Jy1	My21-Jn16	Jn4-Jy21	Jn15	
Comandra pallida Pale Comandra	1973				My20	
	1974		Jn9-16			
Cornus canadensis Bunchberry	1973					
	1974	Jy1		Jn18-Se22		
Corydalis aurea Golden Corydalis	1973		My21		My20	
	1974	My26	My26-Jn16			

Red Deer Area	Rocky Mountain House Area	Stettler Area	Camrose Area	Vermilion Area	Edmonton Area	Jasper Area	Whitecourt Area
2800'	4000'	2700'	2400'	2000'	2200'	3500'	2200'
Jn26-Au27	Jn20-Oc20	Jn22-Au22	Jn22-Jy13		Jn17-26 Jn23-28	Jn17-Au6	
Jy17-Au7	Jn27-Se15				Jy7		
My27 Jn2-Jy17			My27 My30-Jn22	Jn20			
My18-27 My25-Jn14	My31-Jn20	My25	Jn1		My16-24 My20-Jy24	Jn1-15	My26-Jn9
My27-Jn17 My20-Jn2	My29-Au26	My20	My13-16 My20		My6-10	Jn1	My16
Jy20 Jn2-24		Jn17-23	Jn10 Jn12-28	Jn24-Jy25	Jn13-19 Jn10-30	Jn17	
Jn2-Jy20	Jn15-Jy25						Jy9
Ap9 Ap10-Jn2 Au20	Ap28	Ap28-My25	Ap17-My13 Ap20-My30		Ap15-My10 Ap28-My12	Ap9	My6 Ap22
My16 Jn2-19	My25-Jy5					Jn1-12	Ap24 My23
	Jn15-Se2						Jn4-14 Jn7-22
My27 Jy2-Au27		Jn20	My21 Jn1-17		Jn13		
My19-20 Jn23	My25-Jn14				My17-24 My18-Jn15	My21-Jn1	My21 My13-Jn9
	Jn1-Jy5					Jn1-15	My22-Jn8
Jy10-13 Jy17-Au27	Jy18-Se15	Jy1	Jy7	Jy7	Jy8 Jy5-18	Au2-5	Jy1-Au6
Jy10 Jy17-Au27	Jn13-Au19				Jn22 Jy7-Au3	Jn15-Au5	Jn17-20 Jn22-Au1
	Jn21-Au20						
My27-Jn1 My26-Jy2	My30-Oc20	My25	My20 Jn1	Jn22	My17		My22
Jy27-Au20	Jy22	Jy6		Jy7-Se14			Jy29
My25-Jn4 My29-Jn2	Jn20		Jn8		My16-24 My22-Jn9	Jn1	My18-Jn4
My26-Jn13			My27 Jn8	Jn19			My22
Jn4 Jn18-Jy17	Jn29 Jn23-Se2	Jn25	Jn16	Jy1	My27-Jn19 Jn9-19	Jn17-23	My29 Jn21-Au6
My27-Jn2 Jn18-19	My25-Oc20		My13	My13-23	My27-Jn17	Jn1-21	My15 Jn24

		Waterton Area	Mountain View Area	Milk River Area	Cypress Hills Area	Crowsnest Area
Elevation		4200'	4400'	3200'	4100'	4200'
Disporum trachycarpum	1973					My19
Fairy Bells	1974		Jn21		My19	My27
Dryas drummondii	1973					
Yellow Dryas	1974					
Elaeagnus commutata	1973					My29
Wolf Willow	1974					
Epilobium angustifolium	1973					
Fireweed	1974		Jn21			Jn22
Eriogonum flavum	1973					
Yellow Umbrella-plant	1974		Jy25			My19-Jy9
Fragaria virginiana var.	1973				My27-Jn5	My28
glauca - Wild Strawberry	1974	Jn29	Jn21		My19	My25-27
Fritillaria pudica	1973		My11	Mr31-Ap4		Ap10-My30
Yellow Bells	1974					Ap17-My27
Gaillardia aristata	1973					Jn17
Brown-eyed Susan	1974		Jn21			Jn29
Galium boreale	1973					Jn20
Northern Bedstraw	1974	Jn29	Jn21			Jn22
Gaura coccinea	1973					
Scarlet Butterfly-weed	1974					
Geranium richardsonii	1973	Jn17-Jy22	Jn17			
White Geranium	1974		Jn21			Jy29
G. viscosissimum	1973		Jn5-17			Jn3
Sticky Purple Geranium	1974	Jn29	Jn21			Jn22
Geum triflorum	1973		Jn5		Jn5-12	My2-19
Three-flowered Avens	1974	Jn29	Jn21		My19	My12-27
Grindelia squarrosa	1973					
Gumweed	1974		Jy22			Au9
Hedysarum alpinum	1973					
Alpine Hedysarum	1974		Jn21			
H. mackenzii	1973					Jn17
Mackenzie's Hedysarum	1974					
Heracleum lanatum	1973					
Cow Parsnip	1974	Jn29				My27
Lathyrus ochroleucus	1973		Jn17			
Yellow Pea Vine	1974	Jn29	Jn21			Jn22
Ledum groenlandicum	1973					
Labrador Tea	1974					
Lesquerella arenosa	1973					
Bladderpod	1974				My19	My27
Liatris punctata	1973					
Blazing Star	1974		Jy22			Au9
Lilium philadelphicum var.	1973					Jn19
andinum - Western Wood Lily	1974	Jn29	Jy25			Jn22
Linnaea borealis var.	1973					
americana - Twin-flower	1974					
Linum lewisii	1973					My20-Jn2
Wild Blue Flax	1974		Jn21			Au9

Fort Macleod Area	Lethbridge Area	Medicine Hat Area	Porcupine Hills Area	Brooks Area	Champion Area	Calgary Area	Longview Area	Carseland Area
3200'	3100'	2200'	3500'	2500'	3000'	3500'	4500'	3100'
			My8-30			My7-Jy27 My21-24	Jn9 My25-Jn1	
						Jn17 Jn11	Jn9-16 Jn24	
	My20-30 My28					My18-Jy4 Jn10-19	Jn9-16	Jn3 Jn15
			Jy8			Jy3-Se3 Jn26-Se2		
	Jn8-Jy2 Jn7		My30		Jn5	Jn7-21 Jn17-Jy15		Jn3 Jn19
			My27-Jy3			My3-Se29 My5-Jy13	Jn9-16 My25-Jn23	
	Ap10-20 Ap14-25		Ap24-Jn2					
	Jn8-Jy2		Jy6 My30-Jy12			Jn20-Se6 Jn18-Se3	Jn9-16	Jn19-Se21
Jy4-11			Jy6 My30-Jy12			Jn7-Jy27 Jn17-Jy30		
Jy4-11	Jn13-21 Jn7	Jn3	My30		Jn5	Jn8-Se5 Jn8-Au17		Jn19
						Jy27 Jn29-Jy13	Jn16	
			Jy6-Au9 My30-Jy12			Jn2-Oc2 Jn1-Jy13	Jn9-16 Jn23-Se21	
	Ap20-My20 Ap23-25		My1-Jy6 My8-Jy3	Ap26-Jy12		My8-Jy4 Ap29-Jn20	My29-Jn16 My25-Jn23	
Jy22-30	Au3		Au8			Jn27-Jy19 Jy8-16	Se22	
			My30-Jy12			Jn9-16 Jn11-Jy13		
						My13-Jn10 My21-Jy30		My14-20
						Jn18-Jy27 Jn29-Jy13	Se9	
			Jy6			Jn3-Jy4 Jn3-Jy13	Jn9-16 Jn23	My27-Jn3
	My3-10 Ap25-My3		My1 My30	My11		My2-Jn10 Ap23-Jn11		My12-20
Au5	Jy29		Au9 Au8-9			Jy21-Au8 Jy23		
			Jy6 Jn24-Jy12			Jn23-Jy10 Jn14-Jy13	Jn16 Jn29	
			Jy8					
	My20-30 My28		Jy6 My30-Jy12		Jy28	Jn2-Se29 Jn15-Au24	Jn9-16 Jn24-Se22	

		Bragg Creek Area	Canmore Area	Banff Area	Drumheller Area	Olds Area
Elevation		3900'	4200'	4500'	2300'	3400'
Disporum trachycarpum	1973				My13-21	
Fairy Bells	1974		Jn16		My11	
Dryas drummondii	1973	Jn23	Jn4-17			
Yellow Dryas	1974	Jn15-Jy1	Jn2-Au17	Jy4-21		
Elaeagnus commutata	1973					
Wolf Willow	1974		Jn16-29		Jn10	Jn11
Epilobium angustifolium	1973					
Fireweed	1974		Jy11-27	Jy4-Se22		
Eriogonum flavum	1973					
Yellow Umbrella-plant	1974				Jn23-Jy9	
Fragaria virginiana var.	1973		My21-27			
glauca - Wild Strawberry	1974	My31-Jn1	My21-Jn16	Jy21-Se22		
Fritillaria pudica	1973					
Yellow Bells	1974					
Gaillardia aristata	1973		Jn15-26		Jy6	
Brown-eyed Susan	1974		Jn24	Jn17	Jy1	
Galium boreale	1973				Jn18	
Northern Bedstraw	1974	Jy1	Jn14-Jy11	Jn27	Jy11-28	
Gaura coccinea	1973				Jn10	
Scarlet Butterfly-weed	1974					
Geranium richardsonii	1973	Jy8	Jn10-19			
White Geranium	1974	Jn16-24				
G. viscosissimum	1973					
Sticky Purple Geranium	1974					
Geum triflorum	1973		My9-Jn17		My5-21	
Three-flowered Avens	1974		My14-Jn16	Jn4	My4-20	
Grindelia squarrosa	1973				Au10	
Gumweed	1974				Au15	
Hedysarum alpinum	1973				My30-Jy27	
Alpine Hedysarum	1974		Jn21-29	Jy4	Jy9	
H. mackenzii	1973		My21			
Mackenzie's Hedysarum	1974		Jn2-Jy11			Jn12
Heracleum lanatum	1973		Jn17			
Cow Parsnip	1974		Jn29		Jn29-Jy10	
Lathyrus ochroleucus	1973					
Yellow Pea Vine	1974		Jn16	Jn17		
Ledum groenlandicum	1973	Jn23				
Labrador Tea	1974					
Lesquerella arenosa	1973				My5-12	
Bladderpod	1974				My11	
Liatris punctata	1973				Au10	
Blazing Star	1974				Jy30	
Lilium philadelphicum var.	1973		Jn25-26		Jy5	
andinum - Western Wood Lily	1974		Jn16-24	Jy1	Jy1-9	
Linnaea borealis var.	1973					
americana - Twin-flower	1974			Jy1-Se22		
Linum lewisii	1973		Jn25		Jn6	
Wild Blue Flax	1974		Jn16-24	Jn17	Jn14	

Red Deer Area	Rocky Mountain House Area	Stettler Area	Camrose Area	Vermilion Area	Edmonton Area	Jasper Area	Whitecourt Area
2800'	4000'	2700'	2400'	2000'	2200'	3500'	2200'
My16-Jn4 My26-Jn19	My29-Jn2		My26		My13-25 My25	Jn17	My19 My26-Jn3
	Jn17 Jy24						
Jn18 Jn18-Jy2	Jn20	Jn14-23			Jn10-17	Jn17	
Jy11 Jy2-Au27	Jn27-Se15		Jy6		Jn17-Jy1 Jn29-Jy17	Au2	Jn29-Au6
My27-Jn5 My25-Jn23	My23-Nv3	My25	My20 My26-Jn1		My14-24 My24-Jn2	Jn12-23	My14-15 My13-Jy6
Jy10 Jn29-Jy20	Jn30-Jy2	Jy4	Jy7		Jy6 Jy5		
Jn19-Au20	Jn29 Jn20-Se15	Jn22	Jn28	Jn21-23	Jn7-16 Jn15-30	Jn24	Jn12 Jn22-Au6
		Jy6					
Jn20 Jn18	Jn26-Se2				Jn26 Jn29		Jy26-Au6
Jn22							
My25 My15-Jy2	Jn27	My20-26	My21 My20-Jn2	Jn17		My23	
Jy17-Au27			Au14	Jy23-Au30			
	Jn25-Se2		Jy7	Jy26	Jy2		
Jn2	Jn16-Au30					Jn17	
Jy11 Jn29-Jy4	Jn26-Se2		Jn28		Jn23 Jn23-28	Jn17-Au5	Jn22-Au6
Jn18-Jy5	Jn20-Jy26		Jn3 Jn6-8		Jn10-16	Jn17	My21-29 Jn22-Jy6
	Jn16-Jy25				Jn4-19 Jn9-15	Jn15	My29 Jn15-Jy6
Jn2							
Au14-19							
Jn28 Jy2-17	Jn29 Jn30-Jy24	Jn28		Jy1-23	Jn22 Jy3-7	Jn20	Jn13-19 Jy6-26
Jn18-Jy27	Jn29 Jn27-Se2		Jn28		Jn17-19 Jn15-29	Au5	Jn22-Jy12
Jy7-20							

		Waterton Area	Mountain View Area	Milk River Area	Cypress Hills Area	Crowsnest Area
Elevation		4200'	4400'	3200'	4100'	4200'
Lithospermum ruderale	1973		Jn5			My26
Woolly Gromwell	1974	Jn29	Jn21			My20-27
Lonicera dioica var. glaucescens - Twining Honeysuckle	1973					
	1974					Jn24
L. involucrata	1973					
Bracted Honeysuckle	1974					
Maianthemum canadense var. interius - Wild Lily-of-the-valley	1973					
	1974					
Mentha arvensis var. villosa	1973					
Wild Mint	1974		Jy22			Jn22
Mertensia paniculata	1973					
Tall Lungwort	1974					Jn22
Monarda fistulosa var. menthaefolia - Wild Bergamot	1973					
	1974		Jy22			Jy29
Oxytropis splendens	1973					
Showy Locoweed	1974	Jn29	Jy22			Au4
Parnassia palustris	1973					
Grass-of-Parnassus	1974	Jn29				
Pedicularis groenlandica	1973		Jn17			
Elephant Head	1974		Jn21			Jn22
Penstemon confertus	1973	Jn17-Jy22	Jn17			
Yellow Beard-tongue	1974	Jn29	Jn21			Jy22
P. nitidus	1973		Jn17		Jn5	My20
Smooth Blue Beard-tongue	1974		Jn21		My19	My11-27
Phlox hoodii	1973		My11-Jn6	Ap1-13	My13	Ap23-My19
Moss Phlox	1974		Jn21		My19	Ap24-My27
Populus balsamifera	1973					
Balsam Poplar	1974					Ap21
P. tremuloides	1973					
Aspen	1974					Ap21
Potentilla anserina	1973					
Silverweed	1974	Jn29	Jn21			
P. concinna	1973		My11		My13	Ap13-My19
Early Cinquefoil	1974		Jn21		My19	Ap25-My27
Prunus pensylvanica	1973					
Pin Cherry	1974					
P. virginiana var. melanocarpa - Choke Cherry	1973					My30
	1974					
Pyrola asarifolia	1973					
Common Pink Wintergreen	1974					
Ranunculus rhomboideus	1973				My13	
Prairie Buttercup	1974				My19	
Ribes oxyacanthoides	1973		Ap12			
Wild Gooseberry	1974					
Rubus acaulis	1973					
Dwarf Raspberry	1974					
R. pubescens	1973					
Dewberry	1974					

Fort Macleod Area	Lethbridge Area	Medicine Hat Area	Porcupine Hills Area	Brooks Area	Champion Area	Calgary Area	Longview Area	Carseland Area
3200'	3100'	2200'	3500'	2500'	3000'	3500'	4500'	3100'
	My27					My13-Jy7	My29-Jn16	
			My27-Jn17			My19-Jn20	My25-Jn23	
						Jn3-Jy27		
						Jn6-30		
						Jn9-Jy4		
						Jy4-Se5		
			Au7			Jy13-14		
						Jn6-Jy27	Jn9-16	
			Jy3			Jn8-15		
			Jy8-Au9			Jy3-Au8		
Jn29-Jy11	Jn29	Jy14	Jy12-30			Jy2-Au4		
						Jn11-Jy27	Jn16	
Jy4-11	My28		Jy3-Se22			Jn18-Jy13	Jy14	
						Jy17-Au23		
						Jn16-Jy10		
						Jn9-Jy22		
			Jy6			My18	Jn16	
			Jn17-Jy12					
	My20	My13				My15-Jn10	Jn9-16	
	My3-10		My8-30	My11-Jn2		My27-Jn19	My25-Jn24	My12-Jn15
	Ap1-My10		My1			Ap8-Jy9	Jn9-16	Ap14-Jn3
			Ap17-My30	My11-Jn2	Ap20	Ap18-Jn19	My25-Jn1	My12-20
						My1-13		
						Ap25-My5	My25	
						Mr24-My13		
			Jn6			Ap13-My1		
	My20					My29-Au18		
	My28		My30	Jn2		My20-Jy26		
	Ap20-My11		My6			Ap7-Se8	Jn9-16	
	Ap25		Ap29-My30			Ap14-Jn9	My25-Jn1	
							Jn9-16	
							My25	
	My20					My27-Jn10	Jn16	My27-Jn3
	My25					My15-Jn1		My14-Jn15
						Jn3-Jy27	My30-Jn16	
						Jn30-Jy22		
			My1			Ap20-Jn2		
			Ap17-My27			Ap18-My27	My19	
	Ap25					My1-14	Jn9-16	
	Ap25		My8			Ap23-Jn30	My25-Jn1	My12
						My29-Jn6		

		Bragg Creek Area	Canmore Area	Banff Area	Drumheller Area	Olds Area
Elevation		3900'	4200'	4500'	2300'	3400'
Lithospermum ruderale	1973		My21-27		My21	
Woolly Gromwell	1974		Jn1-16		My26	
Lonicera dioica var. glaucescens - Twining Honeysuckle	1973		Jn19			
	1974		Jn16-24			
L. involucrata	1973		Jn17-26			
Bracted Honeysuckle	1974		Jn1-24	Jn17		
Maianthemum canadense var. interius - Wild Lily-of-the-valley	1973					
	1974					
Mentha arvensis var. villosa	1973					
Wild Mint	1974		Jy27			
Mertensia paniculata	1973	My21-Jy8	Jn26			
Tall Lungwort	1974	My20-Jy1	Jn1-24			
Monarda fistulosa var. menthaefolia - Wild Bergamot	1973				Jy15	
	1974		Jy27		Jy10	
Oxytropis splendens	1973					
Showy Locoweed	1974		Jn8	Jy21		
Parnassia palustris	1973					
Grass-of-Parnassus	1974		Au1-17			
Pedicularis groenlandica	1973		Jn17			
Elephant Head	1974		Jn16-24	Jy20-Au24		
Penstemon confertus	1973					
Yellow Beard-tongue	1974		Jn16-24	Jy4		
P. nitidus	1973		My27		My15-21	
Smooth Blue Beard-tongue	1974				My28	
Phlox hoodii	1973		My16		Ap19-My12	
Moss Phlox	1974		Ap30-My25		My4-Jn16	
Populus balsamifera	1973		My8-15			
Balsam Poplar	1974		Ap28			
P. tremuloides	1973		Ap10-My14		My5-12	
Aspen	1974		Ap15-25			
Potentilla anserina	1973				Jn15	
Silverweed	1974		Jn16-24		Jy30	
P. concinna	1973		My6-21		My5-21	
Early Cinquefoil	1974		Ap25-Jn16		My11	
Prunus pensylvanica	1973				My18	
Pin Cherry	1974				My28	
P. virginiana var. melanocarpa - Choke Cherry	1973		Jn5		My25	
	1974		Jn16		Jn8	
Pyrola asarifolia	1973					
Common Pink Wintergreen	1974		Jn29	Jy4	Jy9	
Ranunculus rhomboideus	1973				My12	
Prairie Buttercup	1974					
Ribes oxyacanthoides	1973		My14		My5-13	
Wild Gooseberry	1974		My27		My11	
Rubus acaulis	1973	Jy8	Jn19			
Dwarf Raspberry	1974		Jn12-16	Jn17		
R. pubescens	1973					
Dewberry	1974		Jn12-13			

Red Deer Area	Rocky Mountain House Area	Stettler Area	Camrose Area	Vermilion Area	Edmonton Area	Jasper Area	Whitecourt Area
2800'	4000'	2700'	2400'	2000'	2200'	3500'	2200'
						Jn9	
Jn22-24	Jy2	Jn24	Jn10 Jn15-Jy6		My24-Jn8 Jn15-16	Jn17	Jn4-15 Jn9-29
My31-Jy2	Jn14-Jy2		Jn1		My24-31 Jn9	Jn1-23	My19 My26-Jn23
Jn3 Jn2-Jy2	Jn29 Jn20-Jy26		Jn12-21	Jn17	My18-Jn17 Jn15-19		Jn4-15 Jn9
Jy20 Jy14-Au27		Au22	Jy28		Ju18-Au7		
My23-Jn20 Jn18-23	Jn14 Jn8-Au28				My24-Jn19 My30-Jn9	Jn12	My29-Jy14 My25-Jy12
Jy12-13 Jy16-Au20				Jy20-Au2	Jy13		
	Jn9-Au22				Jn23		
	Jy7-Au3			Jy23			Jy12-29
Jy3	Jn30-Se15	Jn20		Jy23	Jn23 Jn31		
	Au16-19						
Jn2							
							Ap16-25
Ap25 My6					Ap18 Ap27	Ap30	Ap27
Ap22 Ap24-28		Ap26	Ap17-26 Ap20-28		Ap10-15 Ap21-24	Ap29	Ap3
My27 Jn18-Jy2	Jn12-20	Au23	Jn22	Jn23-Au1	Jn9-12		
My26-Jn2		My25-26	My13 My20				
My27 Jn2-5					My15-24 My22-Jn2		My17
My27 Jn2-16	Jn12-20	Jn14	My20		My16-23 My29-Jn10	Jn23	My30
Jy6 Jn24-Jy17	Jn29 Jy24-Au20		Jn16	Jy7	Jn19-23 Jn29-Jy16	Au5	Jn17-18 Jy6-25
My1-23 Ap30-Jn2	My29-Jy7	My7-26	My13 My30		Ap20-My17	Jn17	My17 My13
My27 My26-Jn2	My29-Jn20	My25	My26		My16-24 My4-21	Jn17	My15 Jn6
Jn5 Jn23	Jn15-Jy2				My29-Jn17 My26-Jn9		My19 Jn9-22
Jn4 Jn20-23	Jn12-Jy2		Jn8		My26-Jn1	Jn17	My21 Jn22

		Waterton Area	Mountain View Area	Milk River Area	Cypress Hills Area	Crowsnest Area
Elevation		4200'	4400'.	3200'	4100'	4200'
R. strigosus	1973					
Wild Red Raspberry	1974		Jn21			
Senecio canus	1973					
Silvery Groundsel	1974	Jn29				Jn22
Shepherdia canadensis	1973					My19
Canada Buffalo-berry	1974					
Sisyrinchium montanum	1973					My30
Blue-eyed Grass	1974	Jn29	Jn21			
Smilacina racemosa var.	1973	Jn17				
amplexicaulis - False	1974					Jn23
Solomon's-seal						
S. stellata - Star-flowered	1973		Jn17			My19-26
Solomon's-seal	1974		Jn21			My27
Symphoricarpos occidentale	1973					
Western Snowberry	1974					
Thalictrum venulosum	1973					My20
Veiny Meadow Rue	1974	Jn29				
Thermopsis rhombifolia	1973		My11	Ap1-13	Jn5	Ap20-My10
Golden Bean	1974		Jn21		My19	My4-27
Townsendia sericea	1973			Mr31-Ap13		Ap11-26
Townsendia	1974	Nv17			My19	My4
Viburnum edule	1973					
Low-bush Cranberry	1974					
Vicia americana	1973		Jn17			Jn12
American Vetch	1974	Jn29	Jn21			Jn22
V. sparsifolia	1973					
Narrow-leaved Vetch	1974					
Viola adunca	1973		My11		My13-Jn11	My12
Early Blue Violet	1974				My19	My10-27
V. nephrophylla	1973					My9
Bog Violet	1974					
V. nuttallii	1973		My11-Jn5		My13-Jn2	
Yellow Prairie Violet	1974			My10	My19	My3-27
V. rugulosa	1973		Jn17		Jn5-12	My12
Western Canada Violet	1974	Jn29	Jn21			My27
Zizia aptera	1973		Jn5			My19
Heart-leaved Alexanders	1974	Jn29	Jn21			Au9
Zygadenus elegans	1973					
White Camas	1974	Jn29	Jn21			Jn22

Fort Macleod Area	Lethbridge Area	Medicine Hat Area	Porcupine Hills Area	Brooks Area	Champion Area	Calgary Area	Longview Area	Carseland Area
3200'	3100'	2200'	3500'	2500'	3000'	3500'	4500'	3100'
						Jn5-Jy27 Jn17-Jy13		
	My20 My28		My30-Jy12			Jn4-30 My22-Jy14	Jn9-16	
			My8			Ap18-My13 Ap15-Jn5	Jn16 My25	
			Jy8 Jn17-Jy3			My28-Jn18 Jn1-Jy14	Jn9-16	
			My30			Jn7	Jn9-16	
	My20	My13	My30-Jn17			My14-Jn17 My11-Jn19	Jn9-16 My25-Jn24	My19-Jn3
			Au9			Jn6-Au14 Jn30-Au18		
			Jn9-24			My17-Jn10 My28-Jn30	Jn9-16 Jn1	Jn3
	Ap7-My4 Ap24-My14	My1	My12-13 Ap24-Jy3	My11		My1-Jy9 Ap20-Jn29		My12-Jn15
	Ap9-My10 Ap23		Ap24			Ap18-My8	My25	
						Jn6		
Jy4-11	My20-27 My28	My23	My30-Jy12			My31-Jy27 My22-Jy13	Jn9-16	
			Jn17	Jn2		My18-Jy4 My23-Jy14	Jn9-16	Jn3
My15-27	My20		My13-Jy3			Ap15-Jn6 Ap29-Jn15 Sel	Jn9-16 My5-Jn24	Jn3 My12-25
						My13-Jn17 Jn3-8		
	Ap20-My10 Ap25		My13 Ap24-My30	My11		My2-18 My4-Jn5	My29 My25-Jn1	My12
						My12-Jy27 My21-Jy13	Jn9-16 Jn1	Jn3 Jn15
			My23-Jy12			My23-Jy4 My22-Jy13	Jn9-16 My25-Jy24	
			My30-Jy12			My28-Jy27 Jn5-Jy14		

		Bragg Creek Area	Canmore Area	Banff Area	Drumheller Area	Olds Area
Elevation		3900'	4200'	4500'	2300'	3400'
R. strigosus	1973					
Wild Red Raspberry	1974					
Senecio canus	1973		My21		Jn14	
Silvery Groundsel	1974		Jn16-Jy11		Jn14-16	
Shepherdia canadensis	1973		My8		My5-12	
Canada Buffalo-berry	1974		My5-6	Ap29	My4-11	
Sisyrinchium montanum	1973				Jn3-17	
Blue-eyed Grass	1974		Jn16			
Smilacina racemosa var.	1973					
amplexicaulis - False	1974		Jn16-Jy11			
Solomon's-seal						
S. stellata - Star-flowered	1973		My21-27		My15	
Solomon's-seal	1974		My21-Jn16			Jn12
Symphoricarpos occidentale	1973				Jy21	
Western Snowberry	1974				Jy1	
Thalictrum venulosum	1973					
Veiny Meadow Rue	1974		Jn1-16	Jy21		
Thermopsis rhombifolia	1973		My27		My5-Jn3	
Golden Bean	1974		Ap28-30		My4-Jn2	My6-25
Townsendia sericea	1973				My5-12	
Townsendia	1974		Ap28-My14		My11-16	
Viburnum edule	1973					
Low-bush Cranberry	1974		Jn16-24	Jn22		
Vicia americana	1973					
American Vetch	1974		Jn24	Oc26		
V. sparsifolia	1973					
Narrow-leaved Vetch	1974				Oc26	Jn16
Viola adunca	1973		My8-21		My5-20	
Early Blue Violet	1974	Jn1	Ap28-Jn16		My16	
V. nephrophyila	1973		Jn19			
Bog Violet	1974		Jn16-24	Jy21		
V. nuttallii	1973				My7-30	
Yellow Prairie Violet	1974				My11-16	
V. rugulosa	1973				My15-18	
Western Canada Violet	1974		My21-Jy11	Jn24	My11-Jn10	
Zizia aptera	1973		My27		My21	
Heart-leaved Alexanders	1974		My11-Jn16			
Zygadenus elegans	1973					
White Camas	1974		Jn16-Jy11	Jn27-Au24	Jy9	

Red Deer Area	Rocky Mountain House Area	Stettler Area	Camrose Area	Vermilion Area	Edmonton Area	Jasper Area	Whitecourt Area
2800'	4000'	2700'	2400'	2000'	2200'	3500'	2200'
Jn19-Jy17	Jn23-Au28		Jn21		Jn7-19 Jn15-19	Jn17	Jy26
	Jn30-Oc20						
Jn1	My25-Jn22				My6-13	Ap29-Jn1	Ap20-My6 Ap28-My24
Jy3 Jn18-Jy17	Jn30	Jn20-25	Jn7	Jn17 Jn21-23	Jn6-17 Jn22-30	Jn17	My30-Jn7 Jy10-11
	Jn27						Jn13 Jn7-Jy6
My27-Jn4 Jn2-18	Jn19-Jy24	Jn9	My27 My30-Jn16		My20-27 My27-Jn19	Jn1	Jn3-9
Jy5-Au23					Jn26 Jy6-24		
Jn3 Jn18-Jy3	Jn19-Jy11				Jn10-19	Jn23	My21 Jn23
My16-27 My22-Jy2		My7-Jn25	My13-27 My20		My13-19		Jn3
Jn4 Jn2-23	Jn1-24				My27 Jn5-10	Jn15-21	Jn7-23
Jn2-Jy2	Jn20-Se15		Jn11	Jn22	Jn6 Jn15-16	Au2	Jn21-Au1
Jn19-Jy2							
My5-23 My12-Jn18	My24-Jy5	My12-26	My16-20 My20	Jn17	My6-Jn16 My26-Jn2	Jn1	Ap27 My14-25
Jn8 My23-Jy2					My22-Jn23 My26		
Jn2							
My18-Jn4 My23-Au7	Jn6-Jy11	My26			My19-23 My25-Jn9		My19 My16-Jn23
Jn14-Jy2	Jn29 Jn5-Jy11	Jn1-25	Jn22		Jn7-Jy2 Jn24		Jn3
Jy2-17	Jy2-Se15			Jy24-Au8	Jy24	Jn17	

Ryley, Tofield, Wetaskiwin; (24) Vermilion - Amisk, Battle River Crossing, Birch Lake, Cap Ayre Lake, Chester Lake, Clandonald, Edgerton, Gooseberry Lake, Heinsburg, Horseshoe Lake, Islay, Lea Park, Marwayne, Myrnam, Sounding Lake, Whitney Lake; (25) Edmonton - Andrew, Beaumont, Bellis, Cooking Lake, Gibbons, Lamont, Mundare, Opal, Stony Plain, Spruce Grove; (26) Jasper - Grande Cache, Hinton; (27) Whitecourt - Athabasca, Barrhead, Clyde, Dunstable, Fox Creek, Glenevis, Gunn, Little Smoky, Mayerthorpe, Onoway, Swan Hills, Wabamun. We still have had little, or no, data from the Peace River country and from the Lac La Biche - Cold Lake and Wood Buffalo National Park - Fort Vermilion areas.

The present data indicates that phenological spring started about two weeks later in 1974 than in 1973, however, it should be borne in mind that spring 1973 came much earlier than usual so that the 1974 dates are probably close to normal. Spring 1973 was about a week ahead of 1974 by the latter half of May. Phenological dates in both years were close to average by mid-June.

Once again the data indicates a general confirmation of Hopkin's Bioclimatic Law with the more northerly and higher locations tending to have later flowering than the more southern and lower elevation ones.

An interesting fall-flowering of a number of spring-blooming species occurred in 1974. The Prairie Crocus, for example, was found in bloom in the Red Deer area on August 2, on September 6 in the Porcupine Hills area, on September 21 in the Longview area and from November 1 to 11 in the Calgary area. This appears to be associated with warm, dry climatic conditions following cold spells. In other words, the plants may have been tricked by the weather so that they reacted as if winter had come and gone. Physiological-anatomical studies should be made to determine exactly what is involved.

The success of projects like this depends upon the number of observations turned in. An absence of a date on the Table could mean that either the species does not occur in the area, no one happened to see that species in flower, or, if they did, no observation was sent in. In many cases the dates given are accurate indications of the flowering period but in others they simply indicate when people were out. The results should therefore be interpreted with caution and it is to be hoped that, in future years, more observations will be made.

The following individuals are to be commended for helping with this project: Heather Adamson, D. Allen, Elizabeth Allen, P. Allen, B. Askew, Leita Askew, C.B. Bailey, M.W. Battrum, Myrtle Biggs, Dorothy Broadbent, Glynnis Broadbent, Betty Bulmer, Anna Cairns, Audrey Calvert, D. Calvert, Evangeline Case, J.W. Case, Joyce Cole, K. Cole, Susan Crack, Barbara

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Please help make the project a success in 1975. Contact me (The Herbarium, Department of Biology, University of Calgary) if you can help and I will send you observation forms and information. I would also appreciate names of people you might know who could be of help.

This project was partially financed by the National Research Council of Canada, through my operating grant, to whom my thanks are extended. Ellen Sangster provided technical help.

NATURALISTS' BOOKSHELF (9)

by John Kristensen

A Guide to Alberta Vertebrate Fossils from the Age of Dinosaurs. by Hope Johnson and John E. Storer. Provincial Museum of Alberta, Publication No. 4, Queen's Printer, 1974. 129 pp, 132 figs., 1 map. Paper cover. $5.70.

Anyone visiting the badlands of Alberta, particularly of Dinosaur Provincial Park, will undoubtedly have stumbled across a much-eroded piece of fossilized bone or perhaps a tooth of some creature that died over 60 million years ago. In spite of the wide variety of types of fossils to be seen in these areas, the average person is probably content to identify most specimens as "dinosaur bones". The fact is that remains of fishes, amphibians, mammals and other reptiles can be found in close proximity to those of dinosaurs.

The obvious answer to possible queries such as, "What is this?" is a field guide to illustrate and describe the various types of vertebrate fossils one is apt to find in our province. Such a guide has been compiled by Hope Johnson and John Storer. Mrs. Johnson, an avid naturalist, was employed as curator at Dinosaur Provincial Park

for several years. As well as collecting fossil vertebrates, she has been keeping detailed notes and drawings, many of which have become the basis for this manual. In reading the manual, one indeed feels that "he is consulting Hope Johnson's notebook," as Dr. Storer points out in the forward. Mrs. Johnson's artistic abilities are well illustrated in the cover painting of the badlands, as she vividly captures the quiet beauty of the wind and water-eroded sandstone formations at the edge of a summer prairie.

The intent of the manual is clearly outlined in the introduction - to serve as a guide to the smaller vertebrate fossils found in cretaceous rocks of Alberta. The major part of the manual is divided into sections, within which the more commonly found fossils of various broad taxonomic groups are described. Within each section, an introduction lists the specific types of fossil fragments that may be found for the group in question and the geological formations that such material may be found in, followed by detailed drawings and descriptions of the fossils. In most cases, figures consist of precise stiple drawings of fossils, while in a few cases fairly clear black and white photographs are used. I have compared Mrs. Johnson's drawings with numerous personal specimens, and find the former extremely accurate. Labels and numerous special notes beside the drawings are very helpful in terms of knowing the names of some of the bone structures, etc., and also pointing out specific items to look for in making correct identifications. Care has been taken to make most drawings natural size, but where space does not permit or where small specimens are enlarged, actual sizes are given.

The introductory explanation of terminology, the glossary of terms at the back, and the explanation of many terms throughout the manual make the understanding of the text very easy for the reader. The fact that the manual is not overly technical makes it most useful to amateur collectors, while the precision in drawing and ample labeling makes it an excellent reference source to both amateurs and professionals. I definitely recommend this book to those interested in or already involved with collecting, but also to those simply interested in learning something about the types of vertebrate creatures that lived in Alberta between approximately 60 and 90 million years ago.

RECENT PUBLICATIONS ON THE NATURAL HISTORY OF ALBERTA (11)

compiled by Martin K. McNicholl and Virginia Lang

Note: The last installment of this series contained a number of peculiar abbreviations, i.e. TC-FN, The CFN, T CFN. All of these referred to the Canadian Field-Naturalist (Can. Field-Nat.), NOT to the Calgary

Field Naturalist. In addition, three papers appeared as one page which, in fact, were more extensive, as follows: Cody et al. pp. 229-230; Marsh, pp. 129-140; Nelson and Paetz, pp. 157-162.

Asher, C.R. 1974. Sabine's gull sighting - Bassano, Alberta, Sept. 8/73. Calgary Field Naturalist. 6(6): 193.

Bird, C.D. 1974. Studies on the lichen genus Evernia in North America. Can. Journ. Bot. 52: 2427-2434.

Butot, Rudi. 1975. Three Great Blue Heron colonies of the Calgary 50 area, Alberta. Calgary Field Nat. 6(8): 247.

Cairns, Anna. 1975. Dispersal and roosting behavior of starlings. Calgary Field Nat. 6(7): 225.

Finlay, J.C. 1975. The Edmonton bluebird trail - some reflections. Edmonton Nat. 3(1): 3-4.

Houston, C.S. 1974. Abolished and forgotten national grassland parks. Blue Jay. 32: 204-209.

Johnson, Derek J. 1974. A key to the reptiles of Alberta. Calgary Herptelogical Society Bulletin. 3(12): 4.

Johnson, Joseph. 1975. First blooming dates of plants in the Black Diamond-Turner Valley area in 1970 & 1971. Calgary Field Nat. 6(8): 260.

Johnson, J. and A. Larson. 1974. Watching Great Horned Owl nests in the Alberta foothills. Nature Canada. 3(4): 3-7.

Jones, E.T. 1974. Sixteen Alberta bat records, 1971-1974. Blue Jay. 32: 244-245.

Lynch, G.M. and J.E. Toepfer. 1975. California Gulls attack waterfowl broods in Alberta. Auk. 92: 159-160.

O'Keeffe, Scott. 1975. Birds of the university of Calgary vacant property: list of species, their status. Calgary Field Nat. 6(8): 260.

Shantz, B.R. 1974. The chipmunks (Eutamias) of Alberta. Part II. Calgary Field Nat. 6(6): 200-202.

Schantz, B.R. 1974. When do weasels turn white? Calgary Field Nat. 6(6): 202-204.

Weber, W.C. 1974. More Great Crested Flycatchers and Short-billed Marsh Wrens in Alberta. Blue Jay. 32: 230-233.

Wolford, J. 1975. Christmas bird count (Edmonton, 1974). Edmonton Nat. 3(1): 7-9.

A CALENDAR OF THE BUTTERFLIES AND SKIPPERS OF THE ALPINE AREA OF PLATEAU MOUNTAIN

by C.D. Bird

Plateau Mountain, in the Livingstone Range, is located 50 miles southwest of Calgary. Its summit can be reached by a wingind natural gas well access road of about 6 miles in length which travels north from the Kananaskis-Coleman Road at the divide between Wilkinson and Dry Creeks. The alpine area occupies about 6 square miles, most of it easily accessible by road. The top of the mountain is remarkable as its lack of steep, jagged terrain results in a gently rolling plateau and makes it stand out from all other mountains in southwestern Alberta. Timberline occurs at an elevation of 7000-7500 feet and the summit is slightly over 8200 feet.

Much of the summit region is occupied by patterned ground with numerous sorted polygons and sorted nets. These have resulted from frost action on rocks, rock fragments and soil originating from the Rocky Mountain Formation which caps the mountain. This Formation is highly quartzose and contains arenaceous dolomite, limestone, quartzite, sandstone and chert.

No evidence of glaciation has been observed in the alpine zone and it appears likely that it was a nunatak during the last glaciation and that certain arctic-alpine plants, insects and animals were able to persist there while the surrounding area was covered by ice.

The area has an interesting and varied fauna including White-tailed Ptarmigan, Gray-crowned Rosy Finches, Golden-mantled Ground Squirrels, Hoary Marmots and Rocky Mountain Sheep.

The flora of the alpine zone is made up of many characteristic alpine species. A total of 241 plants have been found there, comprised of 88 lichens, 48 bryophytes and 105 vascular plants.

Due to the accessability of the mountain, its butterflies and skippers have been more intensively collected than those of any other mountain in Alberta. The following calendar of 40 species is based on an examination of the material in most of the extant Alberta collections and from information gleaned from a number of articles in the literature. The data is based on the collections of Peter Allen, Robert Anderson, Arthur Bird, C.D. Bird, Don Eff, L. Paul Grey, Gerald Hilchie, John Legge, Andrew Mackenzie, Ted Pike, Felix Sperling, and R. Woodley.

The mountain will probably receive considerable attention in the future. These activities may result in the depletion in numbers, or extinction, of some of the rarer species unless discretion is followed. The taking of long series for exchange should be avoided.

Scientific Name	Common Name	Jun	Jul	Aug	Sep
Boloria alberta	Alberta Fritillary		x		
B. astarte astarte	Astarte Fritillary		x	xx	
B. eunomia dawsoni	Bog Fritillary		xx	x	
Chlosyne damoetas	Damoetas Checkerspot		x		
Coenonympha inornata benjamini	Ringlet		x	x	
Colias alexandra christina	Christina Sulphur		x	x	
C. eurytheme eriphyle	Alfalfa Butterfly		x	x	
C. meadii elis	Mead's Sulphur		xxx	xxx	x
C. nastes streckeri	Nastes Sulphur		xx	xxx	
C. pelidne minisni	Pelidne Sulphur			x	
Erebia epipsodea	Common Alpine		x	x	
Erynnis persius fredericki	Persius Dusky Wing		x		
Euchloe ausonides	Marbled White			x	
E. creusa creusa	Creusa Marble		x		
Euphydryas anicia capella	Anicia Checkerspot	x	xx	x	
E. editha beani	Edith's Checkerspot		x x	xx	
Euptoieta claudia	Variegated Fritillary		xx		
Everes amyntula	Western Tailed Blue		x		
Hesperia comma manitoba	Manitoba Skipper		x	x	
Lycaeides melissa melissa	Melissa Blue			x	
Lycaena snowi	Snow's Copper			x	
L. phlaes arethusa	Arethusa Copper			xxx	
Nymphalis milberti milberti	Milbert's Tortoise-shell		x	x	
Oeneis chryxus chryxus	Chryxus Arctic		xx	x	
O. melissa beanii	Melissa Arctic		xx	x	
O. uhleri varuna	Uhler's Arctic	x			
Parnassius phoebus smintheus	Clouded Parnassian		xxx	xxx	x
Phyciodes campestris camillus	Meadow Crescent			x	
P. tharos pulchella	Pearl Crescent		x		
Pieris napi oleracea	Mustard White		x	x	
P. protodice occidentalis	Western Checkered White		xxx	x	
Plebejus aquilo megalo	Arctic Blue		xxx	xx	x
P. icarioides pembina	Pembina Blue			x x	
P. saepiolus amica	Saepiolus Blue		x x	x	
Pyrgus ruralis	Ruralis Checkered Skipper		x		
Speyeria atlantis helena	Northwestern Silverspot			x	
S. edwardsii	Edward's Fritillary			x	
S. mormonia eurynome	Mormon Fritillary		x	x x	
S. zerene garretti	Zerene Fritillary		x	x	
Vanessa cardui	Painted Lady		x	x	
TOTALS 40		1 2	12 12	28 16	3

Instead more attention should be devoted to studying the insects to learn more about their ecology, food plants and life cycles. Surprisingly little is known about these aspects.

The Table shows a typical flight curve with the first species showing up in the middle of June, a gradual building up to a peak during the first ten days of August, and then a gradual drop with the last species being seen in the first week of September. The flight period amounts to a total of 85 days.

In comparison, Calgary has a flight period in excess of 200 days if one counts over-wintering species, none of which have shown up yet on Plateau Mountain. The peak in Calgary occurs in the middle of June, some 45 days earlier, reflecting its advanced phenological status due to the warmer climate that accompanies its lower elevation (3800 feet).

In the Table each month has been divided into three periods: 1-10, 11-20, and 21 to the end. An "x" indicates one or more collections. The scientific names employed are those in C.F. dos Passos' synonymic list, his two later revisionary articles, or more recent literature.

THE BLUFFTON CANYON

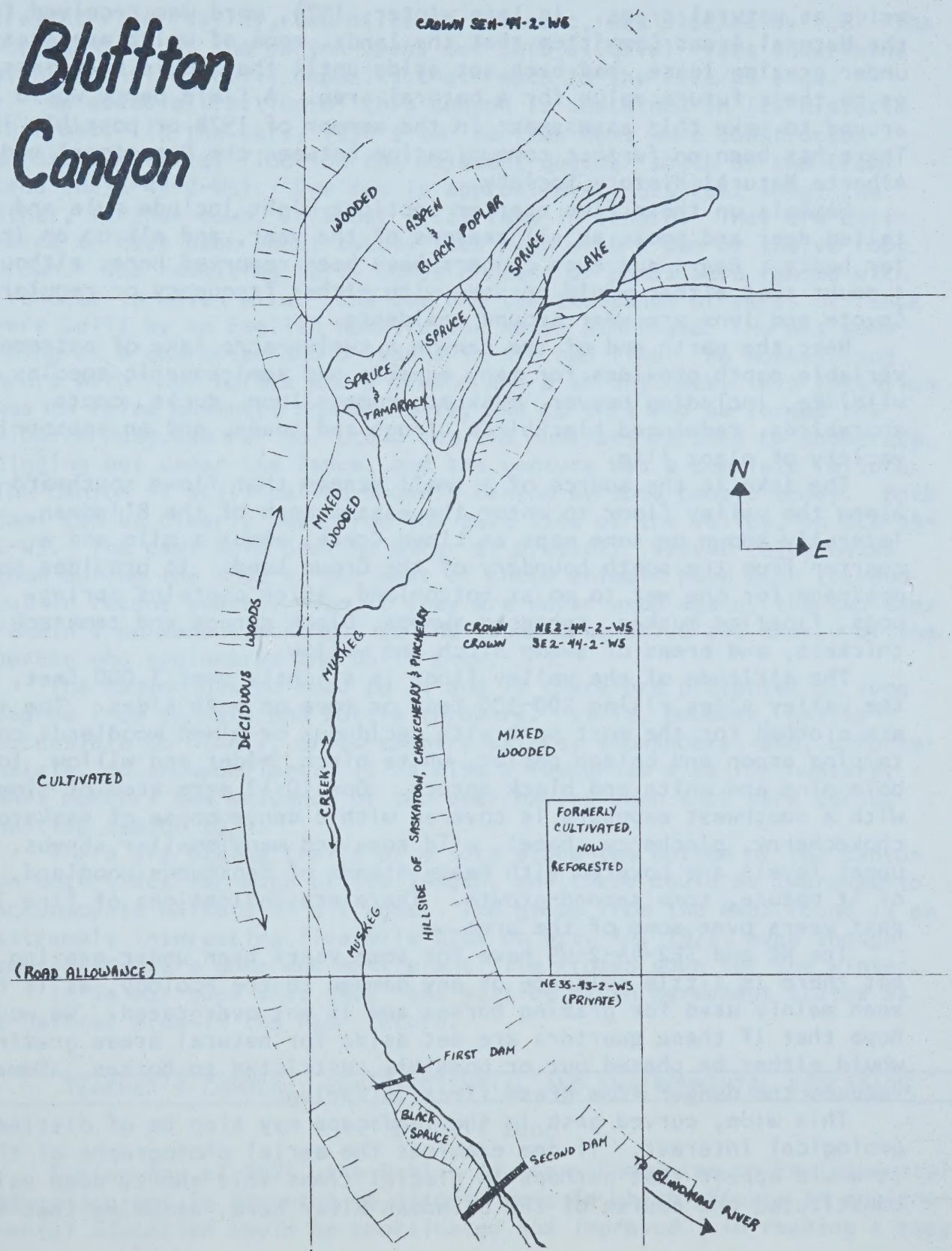
by Fred Schutz
Bluffton, Alberta TOC OMO

Since 1973 the Alberta Natural History Society has taken an active interest in a 2-mile long gape in the topography located five miles east of Bluffton, Alberta, in the upper Blindman River Valley. Known locally as Rouse's Canyon (named after the man who built extensive earthen dams on its lower reaches in the early 1930's), it is one hundred and ten rods across, three hundred feet deep, with steep, wooded slopes and a wet, flat bottom. It is remote enough, with no roads leading to it, that it is little-known beyond the townships where it is situation.

The greater portion of the canyon lies within three quarter sections of Crown Land (NE and SE2-44-2-W5 and SE11-44-2-W5). Just to the north and west of the canyon are two adjacent quarters of Crown Land, the NW and NE11-44-2-W5. The lower portion of the canyon, where the dams are, is privately owned. The whole tract comprises an almost complete cross-section of habitat for fauna and flora native to this region.

The canyon was first brought to the attention of the Natural Areas Committee, Department of Lands and Forests, in the summer of 1973. In October and November of that year, members of ANHS made a preliminary survey of the area's potention and recommended that these quarters be set

Blufftan Canyon



aside as natural areas. In late winter, 1974, word was received from the Natural Areas Committee that the lands, some of which are presently under grazing lease, had been set aside until they could be assessed as to their future value for a natural area. A field party would be around to make this assessment in the summer of 1974 or possibly 1975. There has been no further communication between the Department and the Alberta Natural History Society.

Mammals on these five quarter sections might include mule and white-tailed deer and moose at all seasons of the year, and elk on an irregular basis. Bears and even cougars have been reported here, although I doubt that either would be seen with either frequency or regularity. Coyote and lynx are year around residents.

Near the north end of the canyon a twelve-acre lake of extremely variable depth provides for many aquatic and semi-aquatic species of wildlife, including beaver, muskrat, common loon, ducks, coots, shorebirds, redwinged blackbirds, frogs and toads, and an appropriate variety of plant life.

The lake is the source of a small stream that flows southward along the valley floor to enter the east branch of the Blindman, laterally shown on some maps as Lloyd Creek, about a mile and a quarter from the south boundary of the Crown Land. It provides some drainage for the wet to moist bottomland, which contains springy bogs, floating muskeg, sphagnum swamps, black spruce and tamarack thickets, and areas of swamp birch and willow.

The altitude of the valley floor is slightly over 3,000 feet, with the valley sides rising 200-300 feet or more on both sides. The slopes are clothed for the most part with deciduous or mixed woodlands containing aspen and balsam poplar, white birch, alder and willow, lodgepole pine and white and black spruce. One 10-12 acre area of slope with a southwest exposure is covered with a dense copse of saskatoon, chokecherry, pincherry, hazel, wild rose and many smaller shrubs. The upper levels are covered with heavy stands of deciduous woodland, some of it mature, some second-growth. There are indications of fire in past years over some of the area.

The NE and SE2-44-2-W5 have for some years been under grazing lease, but there is little evidence of any damage to the ecology, as it has been mainly used for grazing horses and is not overgrazed. We would hope that if these quarters are set aside for natural areas grazing would either be phased out or possibly restricted to horses. Some grazing reduces the danger from grass fires in spring.

This wide, curved gash in the landscape may also be of distinct geological interest. If one examines the aerial photographs of the area, it would appear that perhaps in glacial times this short, deep valley constituted the course of the Blindman River here, assuming that the

present river valley, two miles to the east, was blocked by ice. The northern end of the canyon opens out onto alluvial flats underlaind with extensive gravel deposits that reach to the river's edge.

An added attraction of this canyon is contained in its historic interest. In the early 1930's two earthen dams were constructed across the valley floor on the adjacent quarter south of the Crown Land (NE35-43-2-W5). One dam is approximately 525 feet long; the other, farther down, is about 1,125 feet in length. They are estimated to have been about twenty feet high with a ten or twelve foot crown. The resulting forty acres or more of ponds were fenced with trenched-in woven wire. The dam and the thousands of yards of fence were built by an English homesteader named Jim Rouse. He was something of a character and a legend in his own time. He worked long hours with four horses and a fresno and a strong back. His intention was to raise muskrats commercially, and to this end he formed the Alberta Musquash Fur Co. Ltd., but the muskrats refused to cooperate, digging out under the fence, and the venture was a complete failure. The canyon is still called Rouse's Canyon by some people today. Both dams can be clearly seen from the east side of the valley, on SE2-44-2-W5. The dams hold back no water at present. Beaver rejuvenated them during the 1950's, but most of these animals have been trapped out in recent years. Even if they are never used again, the two dams remain a permanent monument to the tremendous drive and energy of the person who engineered and built them.

The canyon has no road to it and is therefore protected to some degree from vandals and bottle throwers. It is, however, easily-accessible to hikers, cross-country skiers, snowshoers, and, unfortunately, to snowmobilers. It is also a favourite area for hunters. ANHS members saw evidence of two deer having been shot here during hunting season 1973.

There are hiking trails of a sort along the bottom of the canyon on both sides for much of its length, and these could be improved to accommodate walkers of all ages. The group from the ANHS found it an extremely interesting five-mile hike on Oct. 14, 1973, even though most birds were gone and most plant life frozen down for the winter.

It is our hope that this land will be given permanent status as a natural area in the near future.

TEACHER'S CORNER: HUMAN POTENTIAL AND ENVIRONMENTAL EDUCATION

by Bill Lang

During May of 1974, the Public Advisory Committee on Environmental Education met in Edmonton to discuss ways in which efforts in environmental education could be coordinated and improved. In reading a copy

of the proceedings (see below for citation), there appears to have been general agreement that: (1) we face an ecological crisis of some significance; (2) the solution primarily lies in effecting changes in person's attitudes and behaviour - their lifestyle; and (3) educational activities need to be upgraded to help bring about these changes. It is gratifying to note further that there appeared to be an awareness that such educationa activities should aim at more than simply creating an understanding of ecological principles. In this connection, many comments were made about the need for a holistic, interdisciplinary approach involving both aesthetic and scientific contact with the environment and an attempt to deal with value issues. In other words, there appears to have been an understanding that a successful environmental education programme must attempt to relate ecology to the economic - political - social system, provide aesthetic or spiritual alternatives to materialism, clarify values and develop value and social commitments. Yet, I fear there is much confusion being hidden by high-sounding phrases. I am struck by the inconsistency between these goal statements and the programme proposals. I can find little appreciation of the difficulty involved in attempting to increase human potential to clarify values and make commitments, find satisfying alternative behaviours or inter-relate aspects of existence. I suspect inadequate conceptualization of the problem and a knowledge deficiency about the means to increase human potential.

We ask for a non-consumptive, non-exploitive, non-manipulative, spiritually compensating lifestyle. Yet, there are very few practical alternatives: we are still dependent upon the existing socio-economic system for the basics; there are building codes, rules and regulations; we are still bombarded by advertising . . . Spiritual (as opposed to material) values involve the ability to gain satisfaction from the non-manipulative, non-exploitive (loving) encounter or interaction with things outsides oneself. Yet, the environment is still exploited - even occasional adventures into the outdoors often involve considerable technology. There is much competition among people -- status symbols, prejudices, put-ons, put-downs . . . The acquisition of the ability to see inter-relatedness and inter-dependence is a slow, personal, reflective process. Yet, we have so little time for reflection and synthesis. Our lives are segmented, de-personalized; we act out various different roles appropriate to various situations. For many, the family has become a place where one eats and sleeps. We have no holistic experiences.

Valuing involves choosing, prizing and acting. What is important is the reasons (or reasoning system) behind behaviour. A value system mediates between behaviour and simple reactions. It involves an attempt to do what is right or good and gaining a sense of satisfaction there from The development of a value system is dependent upon freedom and responsibility, self-respect, time for reflection, support and encouragement.

It builds slowly from the personal, relevant, immediate outwards. Yet, we emphasize behaviour rather than the reasons behind it; we have no time for reflection; we compete rather than support and encourage, and, through competition often destroy self-respect; and, if we deal with values at all, we often start far removed from the individual. At one time, it was possible to draw upon a relatively consistent set of values from society. Today, there are numerous alternative value systems competing for the individual's attention. The problem of developing a value system is compounded.

Operationally, we need not (nor could we) attempt to change everything at once. There is clearly a place for adult education programmes, media presentations, natural history activities, etc. In time, feedback - kickback - from the environment will force us to make adjustments. But what kind of adjustments; under what system? Will this kickback signal the onset of authoritarianism where the lifestyle continues but the benefits are even less evenly distributed? We may see our future by examining practices in schools today. If we do not like what we see, there our major changes must be made.

A teacher may help a student with a personal problem; value issues may be discussed in social studies or biology; a student may be able to plan part of his programme; there may be field trips - there are positive trends but, by and large, schools simply mirror the worst in society. They take away freedom and responsibility or give it "only after it is earned" (as if it had to be). Spare time is viewed as something to be filled up. Knowledge is separated into subjects. Teachers act out their roles; often such roles are depersonalized and authoritarian. Students appropriately respond. Behaviour is emphasized. Group goals and competition are the norm. Students tend to see that the measure of a person is how well he competes in the school environment. Evaluation is seen as reward or punishment rather than feedback. Learning is associated with work. Schools manipulate, sometimes even exploit students. Students respond appropriately. They emphasize basics as if they were something more basic than the qualities I outlined above. By and large, schools simply offer another value system without in any way helping the student to deal with the resulting conflict. We came to be the way we are honestly: our potential to be anything else has largely not been developed.

I am not, of course, advocating that schools abandon their knowledge-acquisition and skill development functions. Rather, that they create a <u>new</u> environment around these functions. Schools should encourage freedom and responsibility to the degree that the student determines it can be handled. Courses, evaluation procedures and administration practices should become increasingly student determined.

Schools should create free time for reflection. Situations where significant encounters with oneself, others or the environment should be provided: the extended outdoor encounter or live-in situation, indeed, any situation where people are together long enough to get to know each other as individuals. And most of all, let us provide this environment with facilitators who are good models. People, secure enough in themselves, who will not resort to authority or manipulation. People who can take interpersonal risks. People who can stimulate, offer alternative values, inter-relate, frustrate, confuse, and, also, listen, understand, accept and love.

Perhaps some of you may think I have taken you too far afield. As naturalists and environmentalists I assume that we all share an understanding of the overriding ecological principle: all things are interrelated and interdependent.

Copies of the Proceedings of the Public Advisory Committee on Environmental Education and Recommendations of the Public Advisory Committee on Environmental Education may be obtained from the Environmental Conservatio Authority, Edmonton.

SOME OBSCURE ALBERTA ORNITHOLOGICAL PUBLICATIONS AND A REVISED LIST OF THE PUBLICATIONS OF A.D. HENDERSON

by Norbert G. Kondla, P.O. Box 1284, Calgary

Through the courtesy of Lloyd Kiff, Western Foundation of Vertebrate Zoology, Los Angeles, I have become aware of a number of obscure Alberta ornithological publications. These appeared in two defunct journals, The Oologist and The Oologists' Record. These journals are now generally unavailable.

The Provincial Museum and Archives of Alberta has published a preliminary bibliography of A.D. Henderson. Many of the citations are incomplete and many of his articles in The Ooologist and The Oologists' Record were understandably not included. All publications of A.D. Henderson known to me are therefore presented herein.

Most of these publications are fairly brief and I hope that most can be reprinted in future editions of the Alberta Naturalist to make them more accessible to Alberta naturalists.

Anonymous. 1934. An oologists paradise in Alberta. Oologists' Record 14:40-41.
Cook, G.L. 1926. Notes on Western Horned Owl. Oologist 43:18.
Cook, G.L. 1933. In the days gone by. Oologist 50:96-97.
Cook, G.L. 1934. Piping Plover nest in Alberta. Oologist 51:26.
Cook, G.L. 1936. Owl notes from Alberta. Oologist 53:4-5.
Crossa, G. 1914. Notes from Alberta, Canada. Oologist 31:54-55.
Fearnehough, N.V. 1938. Birds of the Red Deer River. Oologist 55:42-43.

Fearnehough, N.V. 1938. Rough-legs in the Red Deer. Oologist 55:56-57.
Fearnehough, N.V. 1939. A leaf from a farmers diary. Oologist 56:68-69.
Fearnehough, N.V. 1940. Is the Long-billed Curlew doomed? Oologist 57:93-94
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HIGHLIGHTS OF FALL, 1974, BIRD MIGRATION

PART I: SOUTHERN ALBERTA, by Rudi Butot, 81 Capri Ave. NW, Calgary, Alta.

The transition from summer into fall and fall into winter was so gradual

this year that even at this writing (January, 1975) it is still difficult to believe that we are in mid-winter. The mild weather seemed to have affected the fall migration, especially the passerines which, rather than coming through in a concentration, seemed to have trickled through and, as such, this part of the migration was not as noticable as in some other years.

Nice weather seemed not to have prevailed everywhere, though, as was indicated by the early arrivals this year of fair numbers of southward bound Pectoral, Baird's, Semipalmated and Least Sandpipers, as well as Wilson's and Northern Phalaropes in mid-July. The Snowy Owls, also visitors from the north, similarly put in an early appearance both for first report (3rd week of Oct.) and start of large influx (1st week of Nov.), approximately one month early compared to the last few years.

The last report of Common Loons was from Milo on Nov. 3, as were Red-necked and Horned Grebes. Meanwhile at least one Western Grebe lingered on at Chestermere Lake until Nov. 11, while Eared and Pied-billed Grebes were last seen in the Irricana area Oct. 27 and Sept. 29, respectively. The last reported cormorants were also from the Irricana area, as was the rare sighting of a Snowy Egret, both on Sept. 2. White Pelicans starting massing in the Milo area (McGregor Lake) as early as mid-July, increased in numbers to 1200-1500 by the end of August, and were last reported September 7.

Swans started arriving in southern Alberta on their southward journey in the 2nd week of October, shortly after the White-fronted Geese had passed through. The percentage of immatures per flock ranged from 20-43%. Two swans, an adult and an immature, were still around for the Christmas Bird Count, on the Bow River. The Snow Geese started arriving early in September, peaked during the middle of October, and were last reported Nov. 16 at McGregor Lake.

Sharp-shinned and Cooper's Hawks were last reported Oct. 10 and Sept. 7 respectively, while the Redtails were gone by the end of September, one week after the last reported Swainson's Hawks. Golden and Bald Eagles were reported throughout the fall in the foothills area, usually as singles. The last reported Osprey came, appropriately, from Banff Oct. 26.

The one and only Sandhill Crane report came from Chestermere Lake where 8 were sighted Sept. 29. Greater and Lesser Yellowlegs were most abundant from the last week in August until the first week in September, as were Long-billed Dowitchers. The last reports of Short and Long-billed Dowitchers came from Irricana on Oct. 27, as were the sightings of Black-bellied Plovers and one Dunlin. The last sightings reported of Long-billed Curlews, Willets, Marbled Godwit, Stilt Sandpiper, Avocet and Sanderling were on July 26, Aug. 31, Sept. 8, Sept. 1, Sept. 8 and Sept. 8, respectively, all from the Conrich-Namaka Lake-Irricana triangle.

The last report of a Bonaparte's Gull was Oct. 27; the last Franklin's Gull was reported Sept. 17. The last reported gull to leave was a Ring-

billed Gull on Nov. 14.

Owl reports received, excluding Snowys, were very scarce to non-existant: one Burrowing Owl and one Long-eared Owl and less than a handful of Great Horned and Short-eared Owls each.

Flycatchers had all departed from the Calgary area by Sept. 1, as had the vireos. Two dozen or so Cedar Waxwings are, at this date, lingering on and may stay the winter with their Bohemian brethern.

White-breasted Nuthatch reports are more numerous than in previous years, with sightings coming from Calgary, Rosedale, Water Valley and Dogpound, and, at this late date, Red-breasted Nuthatches are still with us.

Song Sparrows were last seen Nov. 15, one month after the last reports of White-crowned and White-throated Sparrows. The last Lincoln's Sparrow was reported from Calgary Sept. 17, while one report of a Fox Sparrow was received for Sept. 13. Snow Buntings were first reported in flocks of a dozen or so by the end of October and had increased to flocks of 200 or so by early December.

(Additional details of most of these observations can be found in the fall and early winter issues of The Calgary Field Naturalist.)

PART II: CENTRAL ALBERTA - Not available.

FAN NEWS, REPORTS, PROJECTS

MAY FIELD MEETING OF F.A.N.

The spring field meeting of FAN is tentatively scheduled for the May long week-end (May 17) at Writing-On-Stone Provincial Park in southern Alberta, to be hosted by the Lethbridge Naturalists' Society. The meeting will include interesting field trips and evening programs.

If you are interested in attending, contact Frank Harper, 3509-10 Ave. A South, Lethbridge (328-4105) for details.

FAN BRIEF TO PUBLIC HEARINGS INTO THE USE OF PESTICIDES AND HERBICIDES IN ALBERTA - A SUMMARY

Following is the summary contained in the brief FAN submitted to the Public Hearings into the Use of Pesticides and Herbicides in Alberta:

1. Pesticides are useful in agricultural production for the control of pests when more permanent, more specific and less expensive measures are not available.
2. When they are used they should be employed in a manner that minimizes their effect on the environment.
3. As the problems they may cause can seldom be predicted their use should be minimized.

4. The use of pesticides can be reduced by developing better practical alternative control measures. Research is needed to develop them.
5. The use of pesticides should be restricted to agricultural lands. Non-agricultural land should be protected from pesticide use because of its value as a biological reservoir.
6. Use of pesticides on roadsides should be curtailed as much as possible.
7. Pesticides should be replaced by more specific methods for the control of problem wildlife.
8. The development of practitioners for the diagnosis and treatment of plant pests should be considered to encourage the most effective use of pesticides and to integrate their use with other control measures.

WHAT DO YOU THINK OF THE ALBERTA NATURALIST? , by Martin McNicholl

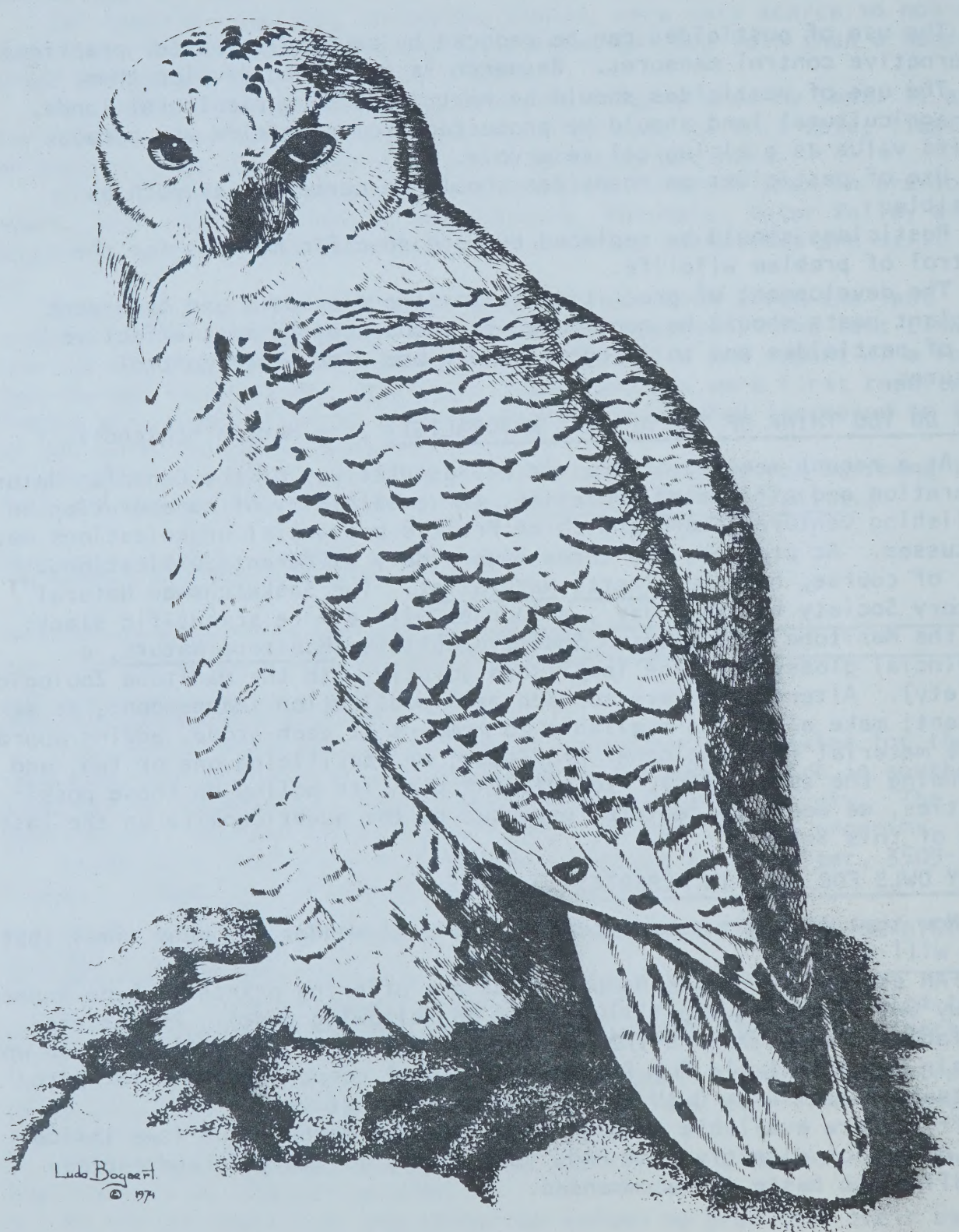
At a recent meeting of Prairie representatives of the Canadian Nature Federation and affiliated societies, the possibility of co-operation in publishing ventures among the three Prairie provincial organizations was discussed. At present, the three have widely different publications. FAN, of course, has the Alberta Naturalist. The Saskatchewan Natural History Society has Blue Jay , a journal with a more scientific slant; and the Manitoba Naturalists' Society publishes Manitoba Nature, a provincial glossy magazine (published jointly with the Manitoba Zoological Society). Alternatives are to keep each publication independent, as at present; make all three available to members of each group, adding appropriate material from the other provinces; or sacrificing one or two, and expanding the survivor(s). To help FAN plan its policy on these possibilities, we would appreciate responses to the questionnaire on the last page of this issue.

SNOWY OWLS FOR SALE IN ALBERTA!

Now that I've got your attention . . . (I wonder how many times that ploy will work??).

FAN and FAN Corporate Member Clubs are offering prints of Ludo Bogaert's "Snowy Owl" line drawing (illustrated on following page). Prints are available in two sizes: 8-1/2x11" ($1.50) and 16x20" ($2.50), both on white Mayfair paper suitable for framing. An ideal companion piece for Peter Karsten's "Great Gray Owl" print sold by FAN last year.

Prints are available through any Corporate Member Club (see inside back cover) or directly from FAN. The supply is limited, and rapidly dwindling, so haste is recommended.


Ludo Bogaert
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CLUB NEWS

BOW VALLEY NATURALISTS'

The Bow Valley Naturalists' January meeting featured Erwin Oertli discussing the life and times of the beaver. Peter Lister of the Environmental Sciences Centre, Kananaskis, spoke on mountain meterology at the February meeting. The March meeting will feature Dr. C.D. Bird, U. of C., discussing the flora and fauna of Patrick Island.

BUFFALO LAKE NATURALISTS' CLUB by Graham Greenlee

The annual meeting of the Buffalo Lake Naturalists' Club was held in the Stettler Town Office on Jan. 16, 1975. Officers were elected for 1975, as follows: Past President, Lloyd Lohr; President, Eric Smith; Vice-President, Virginia Maitland; Secretary, Bernice Greenlee; Treasurer, Elsie Cruikshank; and Librarian, Elsie Doak.

The club is planning to continue the development of hiking and riding trails in the area, and also to devote a few evenings to specialized bird or nature study.

CALGARY FIELD NATURALISTS SOCIETY

The January CFNS meeting featured Dr. Steve Herrero of the U. of C. discussing bear-human interactions. The February meeting's guest speaker was Dr. Robt. Ogilvie, U. of C., on Fragile and Endangered Plant Communities in Alberta. The March meeting featured Dr. Brian Reeves, Archaeology Dept., U. of C., talking of "Mistokis, the People and Their Land: the Last 12,000 Years".

LETHBRIDGE NATURALISTS' SOCIETY, by Helen Schuler

The January meeting featured Michael O'Shea's slide presentation on the flora and fauna of Waterton Park. At the end of January the club sponsored a well-attended, interesting and highly entertaining programme by Cy Hampson.

During January, briefs were presented to the ECA on land use, and on river valley preservation to the Lethbridge City Council. At present, we are also represented on the ad hoc committee on River Valley Development, and on the Outdoor Education Advisory Committee to the Lethbridge Public School System. This latter committee has been deeply involved over the past months in planning and setting up a programme in environmental education, incorporating it into the science and social studies curriculum.

NOTES AND NEWS

PROBLEMS AT WOOD BUFFALO (submitted by Martin K. McNicholl)

A transfer of land from Wood Buffalo National Park to the province of Alberta has been approved in principle by the Department of Indian Affairs and Northern Development. This transfer is planned in order to settle certain land claims by a Cree Band in the vicinity. No public hearings on the issue are planned, setting a dangerous precedent in National Parks Policy. The National and Provincial Parks Association of Canada is calling for a full public hearing and complete disclosure of the government's plans for the park. More details are given in an article by L. (Vern) French in the newsletter of the Edmonton chapter of NPPAC (13715 - 101 Ave., Edmonton).

NEW PARK AT KAKWA FALLS (submitted by Martin K. McNicholl)

A 60,000-acre park surrounding Kakwa Falls is planned by the Alberta government. An Edmonton Journal report (24 January 1975) quotes Dr. Allan Warrack, Minister of Lands and Forests, as saying about 2/3rds of the park will be wilderness. If established, this will be Alberta's largest provincial park. Other provincial parks are proposed near Carseland and where the Notikewin River joins the Peace River.

MYRES APPOINTED TO WESTERN BIRDS (submitted by Martin K. McNicholl)

Allan M. Craig, Editor of Western Birds, a journal devoted to field studies of birds in the provinces and states bordering, and west of the Rocky Mountains, is pleased to announce the appointment of Dr. M. Timothy Myres of Calgary to the Editorial Board. Dr. Myres replaces the late Loran L. Gouden as Alberta's representative on the Board.

DAKOTA COWBIRD IN ALBERTA (submitted by Martin K. McNicholl)

Among 20 recoveries of Brown-headed Cowbirds banded at Sand Lake, South Dakota, listed in an article by Olin E. Bray, John W. DeGrazio, Joseph L. Guarino, and R.G. Streeter in Inland Bird Banding News (46: 204-209, 1974) is a female banded on 14 May 1940 and recovered at Strathmore, Alberta, on 6 June 1941.

PROJECT JONAH RECEIVES WHITE OWL GRANT

Project Jonah, headed by author Farley Mowat, received a $2500 grant from the White Owl Conservation Awards Committee. An international organization, Project Jonah is intent on preventing further slaughter of whales and other cetaceans like dolphins and porpoises.

U.S. TAKES ACTION ON HEPTACHLOR AND CHLORDANE

The Environmental Protection Agency of the U.S. has issued a notice of intent to cancel most uses of two related pesticides, heptachlor and chlordane. The result of experiments with laboratory rats and mice have raised "substantial questions of safety amounting to an unreasonable risk to man and the environment". A public hearing is expected on the proposal. Altogether, there about about 350 manufacturers of the pesticides in the U.S.

In Alberta, heptachlor has been placed on the restricted list, which means pesticide applicators must keep records of use. Use is not limited but discretion must be used. (From "Environment News", 3(10): 19.

CANVASBACK COLOUR-MARKING PROGRAM

Canvasbacks marked with plumage dyes (blue, yellow and pink) during fall, 1974, migration, have been released at key migrational concentration areas in the North Central states by the U.S. Fish & Wildlife Service. This research on the migrational habitat and destinations of the canvasbacks is part of a comprehensive investigation to identify major factors influencing the population status of this species. Any observation of colour-marked canvasbacks should be reported to the Northern Prairie Wildlife Research Centre, P.O. Box 1747, Jamestown, North Dakota 58401.

DEVELOPMENT RESTRICTIONS AT EDMONTON (submitted by Martin McNicholl)

According to "Environment News", a free monthly newsletter of the Alberta Department of the Environment, 3 Restricted Development Areas (RDA's) have been established in the vicinity of Edmonton. In these areas, any proposed change for property must be reviewed by the Department of the Environment - from industrial complexes to a garage at a private home. These RDA's are part of long-range greenbelt/transportation plans. "Environment News" may be obtained by writing Alberta Department of the Environment, 5th Floor, Milner Bldg., 10040 - 104 Street, Edmonton T5J 0Z6.

COW BURP VALUABLE ENERGY POTENTIAL

Investigators for the Texas Highway Dept. claim that a cow burp has valuable energy potential. For whatever reason, a department publication announced that the nation's cows burp an est. 50 million tons of hydrocarbons into the air each year! Reportedly, 10 cows burp enough gas in a year to satify the annual space heating, water heating and cooking requirements for a small house. Now, if those Texans can just find a way to hook ol' Bossy up! (From Conservation News, 40(2): 15.)

PUBLICATIONS QUESTIONNAIRE

(For background information, see page 39 of this issue.)

1. Are you generally satisfied with the style, content and format of the Alberta Naturalist at present? Yes _____ No _____

If not, please give reasons. Please also comment on specific improvements, changes, additions, or deletions that you think would improve the Alberta Naturalist even if you are generally pleased with it.

2. Given the choice of the AN style, a scientific journal and/or a glossy magazine, would you prefer:

AN only _____	AN + glossy _____
scientific only _____	Scientific & glossy _____
glossy only _____	All three _____
AN + scientific _____	No regular publication _____

3. Would you be willing to pay higher dues to receive an expanded publication or additional publications? Yes _____ No _____.

4. Any other comments?

Please return to Martin K. McNicholl, Dept. of Zoology, University of Alberta, Edmonton, Alberta T6G 2E1.

The Alberta Naturalist is published quarterly by the Federation of Alberta Naturalists. Any material printed for the first time in the AN may be reproduced without permission. Credit lines will be appreciated.

Deadlines for submission of material to the Editor are: February 15, May 15, August 15 and November 15. Please include your address. All maps, charts, et cetera, should be submitted on white paper, of the appropriate size for publication.

FAN membership fees are $2.00 per year (January through December) regular, $10.00 supporting, tax deductible. Mail remittance to Mrs. Dorothy Broadbent, R.R. #4, Red Deer, Alberta.

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